

I Claim:

1. A non-invasive blood glucose monitoring system, comprising:
  - 5 mounting one sensor adjacent to the tragus region of the ear of a human diabetic patient and one sensor adjacent to the anthelix region of the ear of a human diabetic;
  - 10 obtaining a value of a fasting blood glucose measurement;
  - obtaining a value of an HbA<sub>1c</sub> measurement;
  - 15 multiplying the value of the fasting blood glucose by the value of the HbA<sub>1c</sub> measurement to get a product;
  - taking the square root obtained from the product of the fasting blood glucose
  - 20 multiplied by the HbA<sub>1c</sub> and using this value as the base line glucose reference level;
  - measuring the temperature of the tragus region of the ear using the adjacent
  - 25 sensor;
  - measuring the temperature of the anthelix region of the ear using the adjacent sensor;
  - 30 determining the temperature differential between the tragus and anthelix with respect to the base line glucose reference glucose so that if the temperature differential subsequently decreases then the person's blood glucose has increased by 1 mg/dl per
  - 35 approximately .024 C and if the temperature differential subsequently increases then the person's blood glucose has decreased by 1 mg/dl per approximately .024 C.
- 40 2. The system of claim 1 wherein the sensors are accurate to  $\pm .035$  K.
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45 3. The system of claim 2 wherein sampling the temperature of the anthelix region and the tragus region of the ear is done multiple times per minute by the adjacent sensor, resulting in essentially continuous monitoring.